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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/057,082	01/25/2002	Andrew Storm	52637-0031	3340

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EXAMINER

TRAN, KHAI

ART UNIT	PAPER NUMBER
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2637

DATE MAILED: 08/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

57

Office Action Summary	Application No.	Applicant(s)	
	10/057,082	STORM, ANDREW	
	Examiner	Art Unit	
	KHAI TRAN	2637	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 January 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-68 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8, 13-15, 21-46, 51-53 and 59-68 is/are rejected.
- 7) ☒ Claim(s) 9-12, 16-20, 47-50 and 54-58 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>12/8/2002</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

2. Claims 1-8, 15, 39-46, 51-52, 53 are rejected under 35 U.S.C. 102(e) as being anticipated by Wang et al (U.S. Pat. 6,704,367).

Regarding claim 1, Wang et al disclose a method for assigning bits to a plurality of channels in a discrete multi-tone modulation communications system, the method comprising: assigning, to each of one or more channels in a plurality of channels, at least a portion of a specified number of bits based on a performance characteristic of each of the one or more channels (the number of bits assigned to each subchannel are mapped onto QAM constellation for form a complex sample, see col. 2, lines 30-47), wherein the specified number of bits satisfies an aggregate constraint on the bits

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assigned to the plurality of channels, so that a total number of bits assigned to the plurality of channels is equal the specified number of bits (determining a preliminary bit assignment for each subchannel by optimizing a DMT system with N carriers for transmission over an additive white Gaussian channel given an available bandwidth as an aggregate constraint, col. 4, lines 7-46).

Regarding claim 2, Wang et al disclose the step of assigning at least portion of the specified number of bit based on a signal to noise characteristic of each of the one or more channel (a signal to noise ratio SNR, col. 5, lines 26-46).

Regarding claim 3, Wang et al disclose assigning zero bits to each of the plurality of channels nit in the active set of channels (zero bits assigned to each of the channels, col. 6, lines 34-47).

Regarding claim 4, Wang et al disclose using performance characteristic of each channel in the plurality of channel to select the set of active channels from the plurality of channels (col. 6, lines 53-67).

Regarding claim 5, Wang et al disclose wherein using the performance characteristic of each channel in the plurality of channels including a signal to noise measurement for each channel in the plurality of channels to select the set of active channels (col. 5, lines 26-54).

Regarding claims 6-8, Wang et al disclose using a signal to noise bits that can be carried by each of the one or more channels, and reducing the determined number of bits that can be carried by each of the one or more channels by increment bit value so

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that total number of bits assigned to the one or more channels is equal to the number of bits (col. 4, lines 7-46).

Claim 15 is similar to claims 1, 2, 6. Therefore, claim 15 is rejected under a similar rationale.

Claims 39-46 are similar to claims 1-8. Therefore, claims 39-46 are rejected under a similar rationale.

Claims 51-52 are similar to claims 13-14. Therefore, claims 51-52 are rejected under a similar rationale.

Claim 53 is similar to claims 1, 2, 6 are rejected under a similar rationale. Therefore, claim 53 is rejected under a similar rationale.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 13-14, 21-30, 31-38, 59-62, 63-68 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al (U.S. Pat. 6,704,367) in view of Sankaranarayanan et al (U.S. Pat. 6,134,274).

Regarding claims 13-14, Wang fail to disclose further comprising assigning a gain value to at least some of the plurality of channels based on the performance characteristic of the at least some of the plurality of channels and further comprising

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assigning a gain value to the one or more channels based on the performance characteristic of each channel in the one or more channels so that a margin of each channel in the one or more channels is approximately equal. Sankaranarayanan et al disclose assigning a gain value to the one or more channels based on the performance characteristic of each channel (col. 4, lines 15-32). It would have been obvious to one having ordinary skill in the art at the time the invention was made to assign the gain value to some of the channels on the performance characteristic as taught by Sankaranarayanan et al into the teachings of Wang et al for calculating overall constraint power. Therefore, the requirement of the individual power level is met.

Claims 21-22 are similar to claims 1, 13-14. Therefore, claims 21-22 are rejected under a similar rationale.

Regarding claim 23-24, Sankaranarayanan et al disclose assigning the gain value to each channel in the plurality of channels so that a sum of the gain values assigned to the plurality of channels satisfies a specified aggregate gain limit (col. 4, lines 33-65).

Claims 25, 26, 27, 28, 29, 30 are similar to claims 1, 13, 14. Therefore, claims 25, 26, 27, 28, 29, 30 are rejected under a similar rationale.

Claims 31-38 are similar to claims 1, 6-8, 13, 14. Therefore, claims 31-38 are rejected under a similar rationale.

Claims 59-62 are similar to claims 21-24. Therefore, claims 59-62 are rejected under a similar rationale.

Claims 63-68 are rejected under a similar rationale. Therefore, claims 63-68 are rejected under a similar rationale.

Allowable Subject Matter

5. Claims 9-12, 16-20, 47-50, and 54-58 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. The following is a statement of reasons for the indication of allowable subject matter: Wang et al and Sankaranarayanan et al fail to disclose a method for assigning bits a plurality of the channels in a discrete-multi-tone modulation communication system, comprising: determining an allowable number of bits that can be carried by each of the one or more channels using a signal to noise measurement for each of the one or more channels for a first group of channels in the plurality of channels, wherein the allowable number of bits that can be carried by each channel in the first group of channels is less than a characteristic minimum bit value for channels in the discrete multi-tone modulation communications system, the method further comprising reducing the determined allowable number of bits for each channel in the first group of channels to zero.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Shively et al (U.S. 2002/0044597 A1) disclose a spread spectrum bit allocation algorithm.

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8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to KHAI TRAN whose telephone number is (571) 272-3019. The examiner can normally be reached on 7:00AM - 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, JAY PATEL can be reached on (571) 272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



KHAI TRAN
Primary Examiner
Art Unit 2637

KT
August 16, 2005